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LISTING OF CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

1. (Original) A magnetoresistive sensor comprising:

first and second magnetically free layers;

a magnetically pinned layer sandwiched between the first and second free layers, said magnetically pinned layer being self pinned;

a first electrically insulating barrier layer sandwiched between said first magnetically free layer and said pinned layer; and

a second electrically insulating barrier layer sandwiched between said second free layer and said pinned layer.

2. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer is pinned by a combination of magnetostriction of the pinned layer and compressive stress within the sensor.

3. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer comprises Co and Fe, wherein the atomic percent of Fe is about 50%.

4. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer comprises CoFe with an atomic percent of Fe ranging from 20 to 60 percent.

5. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer comprises CoFeV, with an atomic percent of Fe ranging from 20 to 60 percent and an atomic percent of V ranging from 2 to 10 percent.

6. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer comprises a single ferromagnetic layer comprising Co and Fe.

7. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer comprises a single ferromagnetic layer comprising Co, Fe and V.

8. (Original) A magnetoresistive sensor as in claim 1 wherein said pinned layer comprises three ferromagnetic layers separated by first and second non-magnetic coupling layers.

9. (Original) A magnetoresistive sensor as in claim 8, wherein said three ferromagnetic layers comprise Co and Fe and wherein the atomic percent of Fe in each layer is 20 to 60 percent.

10. (Original) A magnetoresistive sensor as in claim 8, wherein said three ferromagnetic layers comrpsis Co, Fe and V and wherein the percentage of Fe in each layer ranges from 20 to 60 percent and wherein the atomic percentage of V ranges from 2 to 10 percent.

11. (Original) A magnetoresistive sensor as in claim 1, wherein said pinned layer comprises first two outer ferromagnetic layers and one inner ferromagnetic layers, the outer and inner ferromagnetic layers comprising Co and Fe, said outer ferromagnetic layers having a thickness of about 5 angstroms and said inner ferromagnetic layer having a thickness of about 10 angstroms.

12. (Original) A magnetoresistive sensor as in claim 1, wherein said pinned layer comprises a single layer of ferromagnetic material comprising Co and Fe and wherein said single ferromagnetic layer has a thickness of 5 to 15 angstroms.

13. (Original) A magnetoresistive sensor as in claim 1, wherein said barrier layers comprise Aluminum Oxide.

14. (Original) A magnetoresistive sensor as in claim 1, wherein said barrier layers comprise magnesium oxide.

15. (Original) A magnetoresistive sensor as in claim 1, wherein at least one of said free layers comprises CoFe.

16. (Original) A magnetoresistive sensor as in claim 1, wherein at least one of said free layers comprises a layer of CoFe and a layer of NiFe, the CoFe layer being disposed closer to the pinned layer than the NiFe layer.

17. (Original) A magnetoresistive sensor as in claim 11, wherein said three ferromagnetic layer of said pinned layer are separated from one another by first and second non-magnetic coupling layers.

18. (Original) A mangetoresistive sensor as in claim 11, wherein said three ferromagnetic layers of said pinned layers are separated from on another by first and second non-magnetic coupling layers comprising Ru.

19. (Withdrawn) A magnetic data storage system, comprising:

a motor;

a magnetic disk rotatably connected with said motor;

a suspension;

a slider connected with said suspension for movement adjacent to said disk;

a magnetoresistive sensor, connected with said suspension, said magnetoresistive sensor further comprising:

first and second magnetically free layers;

a magnetically pinned layer sandwiched between the first and second free layers, said magnetically pinned layer being self pinned;

a first electrically insulating barrier layer sandwiched between said first magnetically free layer and said pinned layer; and

a second electrically insulating barrier layer sandwiched between said second free layer and said pinned layer.